PCT

RAW SEQUENCE LISTING

DATE: 04/25/2001

PATENT APPLICATION: US/09/744,852

709/744,852 TIME: 07:30:53

Input Set : A:\es.txt

3 <110> APPLICANT: FROHBERG, Claus

5

Output Set: N:\CRF3\04252001\I744852.raw

| | 5 | <120> | TITLE | OF | INVE | NTIO | N: N | UCLE | IC A | CID | MOLE | CULE | S EN | CODI | NG A | -AMYLASE, | PLANTS | WH |
|------|------|--------|--------|-------|------|------|------|--------|------|------|------|------|------|------|-------|-----------|--------|----|
| SYNT | IES: | IZE A | | | | | | | | | | | | | | | | |
| | 6 | | MODIF | 'IED | STAR | CH, | GENE | RATI | ON P | ROCE | SSES | AND | USE | S | | | | |
| | 8 | <130> | FILE | REFE | RENC | E: 5 | 1441 | 3-38 | 64 | | | | | | | | | |
| C> | 10 | <140> | CURRE | NT A | PPLI | CATI | ON N | UMBE | R: U | S/09 | /744 | ,852 | | | | | | |
| C> | 10 | <141> | CURRE | NT F | ILIN | G DA | TE: | 2001 | -01- | 30 | | | | | | | | |
| | 10 | <150> | PRIOR | APP | LICA | TION | NUM | BER: | PCT | /EP9 | 9/05 | 523 | | | | | | |
| | | | PRIOR | | | | | | | | | | | | | | Ť | |
| | 13 | <150> | PRIOR | APP | LICA | TION | NUM | BER: | 198 | 36 | 099. | 1 | | | | | | |
| | 14 | <151> | PRIOR | FIL | ING | DATE | : 19 | 98-0 | 7-31 | | | | | | | | | |
| | 16 | <160> | NUMBE | R OF | SEQ | ΙŅ | NOS: | 2 | | | | | | | | | | |
| | 18 | <170> | SOFTW | ARE: | Pat | entI | n ve | rsio | n 3. | 0 | | | | | • | | | |
| | 20 | <210> | SEQ I | D NO | : 1 | | | | | | | | | | | | | |
| | 21 | <211> | LENGT | H: 1 | 950 | | | | | | • | | | | | • | | |
| | 22 | <212> | TYPE: | DNA | | | | | | | | | | | | | | |
| | 23 | <213> | ORGAN | ISM: | Sol | anum | tub | eros | um | | | | | | | | | |
| | 25 | <220> | FEATU | RE: | | | | | | | | | | | | | | |
| | 26 | <221> | NAME/ | KEY: | CDS | | | | | | | | | | | | | |
| | 27 | <222> | LOCAT | : NOI | (16 |) (| 1752 |) | | | | | | | | | | |
| | | | OTHER | | | | | | seq | uenc | e be | ta-a | nyla | se | | | | |
| | | | SEQUE | | | | | _ | | | | | _ | | | | | |
| | 32 | attaa | tatta | ttat | t at | g gc | a at | g ag | t ct | g cc | a ca | c ca | gat | c gg | t gc | c tta | 51 | |
| | 33 | | | | Me | t Al | а Ме | t Se | r Le | u Pr | o Hi | s Gl | n Il | e Gl | y Ala | a Leu | | |
| | 34 | | | | 1 | | | | 5 | | | | | 10 | | | | |
| | 36 | tca g | ga aca | tcg | ctc | acg | gcg | gaa | acc | ggt | gga | gtt | tca | tgc | gaa | gtt | 99 | |
| | 37 | Ser G | ly Thr | Ser | Leu | Thr | Ala | Glu | Thr | Gly | Gly | Val | Ser | Cys | Glu | Val | | |
| | 38 | | 15 | | | | | 20 | | | | | 25 | | | | | |
| | 40 | ccg g | cg aag | ggg | agt | tca | gct | aca | tca | gct | atg | tgg | aga | aca | ccg | atg | 147 | |
| | 41 | Pro A | la Lys | Gly | Ser | Ser | Ala | Thr | Ser | Ala | Met | Trp | Arg | Thr | Pro | Met | | |
| | 42 | 30 | 0 | | | | 35 | | | | | 40 | | | | | | |
| | | | at tta | | | | | | | | | | | | | | 195 | |
| | | | sn Leu | Lys | Val | | Val | Gln | Lys | Thr | Gly | Thr | Glu | Ile | Asp | Arg | | |
| | 46 | | | | | 50 | | | | | 55 | | | | | 60 | | |
| | | | cg ccg | | | | | | | | | | | | | | 243 | |
| | | Val Se | er Pro | Ser | | Ser | Pro | Pro | Met | | Pro | Met | Met | Gly | | Gly | | |
| | 50 | | | | 65 | | | | | 70 | | | | | 75 | | | |
| | | | gg ccg | | | | | | | | | | | | | | 291 | |
| | | Met A | rg Pro | _ | Leu | Leu | Ala | Cys | | Ala | Leu | Met | Glu | | Gln | Val | | |
| | 54 | | | 80 | | | | | 85 | | | | | 90 | | | | |
| • • | | | ag gta | | | | | | | | | | | | | | 339 | |
| | | Asp G | lu Val | Val | Glu | Arg | Glu | | Lys | Val | Arg | Asn | | Ser | Glu | Lys | | |
| | 58 | | 95 | | | | | 100 | | | | | 105 | | | | | |
| | | | aa gga | | | | | | | | | | | | | | 387 | |
| | | _ | s Gly | Val | Pro | ٧al | | Val | Met | Met | Pro | | Asp | Ser | Val | Lys | | |
| | 62 | 11 | | | | | 115 | | | | | 120 | | | | | | |
| | | | at cat | | | | | | | | | | | | | | 435 | |
| | 65 | Met Ad | n Hie | Thr | Val | Δcn | Δrσ | T.37 C | Lvc | Δla | Mot | Δcn | Δla | Sor | T.em | Gln | | |

65 Met Asp His Thr Val Asn Arg Lys Lys Ala Met Asn Ala Ser Leu Gln



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DATE: 04/25/2001 TIME: 07:30:53 PATENT APPLICATION: US/09/744,852

Input Set : A:\es.txt

Output Set: N:\CRF3\04252001\1744852.raw

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| | | ttq | aag | agc | qcc | qqt | qtq | gaa | qqq | att | atg | atq | gat | ata | taa | | 483 |
| | | | | Ser | | | | | | | | | | | | | |
| 70 | | | - | | 145 | _ | | | - | 150 | | | - | | 155 | - | |
| 72 | gga | ttg | gtg | gag | aga | gat | gcg | ccg | gga | gag | tat | aat | tgg | ggc | ggt | tat | 531 |
| 73 | Gly | Leu | Val | Glu | Arg | Asp | Ala | Pro | Gly | Glu | Tyr | Asn | Trp | Gly | Gly | Tyr | |
| 74 | _ | | | 160 | - | _ | | | 165 | | _ | • | _ | 170^{-} | _ | _ | |
| 76 | gct | gag | ctt | atg | gaa | atg | gcg | aaa | aaa | cat | gga | ctc | aaa | gtt | caa | gct | 579 |
| 77 | Ala | Glu | Leu | Met | Glu | Met | Ala | Lys | Lys | His | Gly | Leu | Lys | Val | Gln | Ala | |
| 78 | | | 175 | | | | | 180 | | | | | 185 | | | | |
| 80 | gtg | atg | tct | ttc | cat | caa | tgt | ggt | gga | aac | gtc | ggt | gat | tcc | tgc | acg | 627 |
| 81 | Val | Met | Ser | Phe | His | Gln | Cys | Gly | Gly | Asn | Val | Gly | Asp | Ser | Cys | Thr | • |
| 82 | | 190 | | | | | 195 | | | | | 200 | | | | | |
| 84 | atc | cct | ctt | cca | agg | tgg | gtt | gtt | gag | gag | atg | gag | aag | gat | cca | gat | 675 |
| 85 | Ile | Pro | Leu | Pro | Arg | Trp | Val | Val | Glu | Glu | Met | Glu | Lys | Asp | Pro | Asp | |
| 86 | 205 | | | | | 210 | | | | | 215 | | | | | 220 | |
| 88 | ctt | gca | tac | aca | gat | cag | tgg | gga | agg | agg | aat | ttt | gaa | tat | gta | tcg | 723 |
| 89 | Leu | Ala | Tyr | Thr | Asp | Gln | Trp | Gly | Arg | Arg | Asn | Phe | Glu | Tyr | Val | Ser | |
| 90 | | | | | 225 | | | | | 230 | | | | | 235 | | |
| | | | | gat | | | | | | | | | | | | | 771 |
| 93 | Leu | Gly | Cys | Asp | Thr | Leu | Pro | Val | Leu | Lys | Gly | Arg | Thr | Pro | Val | Gln | |
| 94 | | | | 240 | | | | | 245 | | | | | 250 | | | |
| | | | | gat | | | | | | | | | | | | | 819 |
| | Cys | Tyr | Ser | Asp | Phe | Met | Arg | Gly | Phe | Arg | Asp | Arg | Phe | Glu | Asn | Leu | |
| 98 | | | 255 | | | | | 200 | | | | | | | | | |
| | | | | | | | | 260 | | | | | 265 | | | | |
| 100 | | | gac | | | | gaa | att | | | | | ggt | | | gga | 867 |
| 100 101 | Leu | Gly | gac Asp | | | | gaa Glu | att | | | | Met | ggt Gly | | | gga Gly | 867 |
| 100 101 102 | Leu | Gly 270 | gac | Thr | Ile | Val | gaa Glu 275 | att | Gln | Val | Gly | Met 280 | ggt Gly | Pro | Ala | Gly | |
| 100 101 102 104 | Leu gag | Gly 270 ctc | gac Asp | Thr | Ile cca | Val tcc | gaa Glu 275 tat | att Ile | Gln gaa | Val aaa | Gly gat | Met 280 gga | ggt Gly gta | Pro | Ala | Gly | 867 915 |
| 100 101 102 104 105 | Leu gag Glu | Gly 270 ctc Leu | gac Asp | Thr | : Ile | Val tcc Ser | gaa Glu 275 tat | att Ile | Gln gaa | Val aaa | Gly gat Asp | Met 280 gga Gly | ggt Gly gta | Pro | Ala | Gly ttc Phe | |
| 100 101 102 104 105 106 | gag Glu 285 | Gly 270 ctc Leu | gac Asp cgt Arg | Thr tat Tyr | cca Pro | tcc Ser 290 | gaa Glu 275 tat Tyr | att Ile ccg Pro | Gln gaa Glu | Val aaa Lys | Gly gat Asp 295 | Met 280 gga Gly | ggt Gly gta Val | Pro tgg | Ala aaa Lys | ttc Phe 300 | 915 |
| 100 101 102 104 105 106 | gag Glu 285 | Gly 270 ctc Leu | gac Asp cgt Arg | Thr tat Tyr | cca Pro | tcc Ser 290 | gaa Glu 275 tat Tyr | att Ile ccg Pro | gaa Glu tat | Val aaa Lys gac | gat Asp 295 aag | Met 280 gga Gly | ggt Gly gta Val | tgg Trp | Ala aaa Lys agt | ttc Phe 300 agc | |
| 100 101 102 104 105 106 108 | gag Glu 285 cct | Gly 270 ctc Leu | gac Asp cgt Arg | Thr tat Tyr | cca Pro gct | tcc Ser 290 ttt Phe | gaa Glu 275 tat Tyr | att Ile ccg Pro | gaa Glu tat | Val aaa Lys gac Asp | gat Asp 295 aag Lys | Met 280 gga Gly | ggt Gly gta Val | tgg Trp | aaa Lys agt | ttc Phe 300 agc | 915 |
| 100 101 102 104 105 106 108 109 | gag Glu 285 cct | Gly 270 ctc Leu gga Gly | gac Asp cgt Arg att | tat Tyr ggt | cca Pro gct Ala 305 | tcc Ser 290 ttt Phe | gaa Glu 275 tat Tyr cag Gln | att Ile ccg Pro | gaa Glu tat Tyr | val aaa Lys gac Asp | Gly gat Asp 295 aag Lys | Met 280 gga Gly tac | ggt Gly gta Val | tgg Trp | aaa Lys agt Ser 315 | ttc Phe 300 agc | 915 963 |
| 100 101 102 104 105 106 108 109 110 | gag Glu 285 cct Pro | Gly 270 ctc Leu gga Gly | gac Asp cgt Arg att | tat Tyr ggt Gly | cca Pro gct Ala 305 gca | tcc Ser 290 ttt Phe | gaa Glu 275 tat Tyr cag Gln | att Ile ccg Pro tgt Cys | gaa Glu tat Tyr | val aaa Lys gac Asp 310 aag | Gly gat Asp 295 aag Lys | Met 280 gga Gly tac Tyr | ggt Gly gta Val atg | tgg Trp atc | aaaa Lys agt Ser 315 | ttc Phe 300 agc Ser | 915 |
| 100 101 102 104 105 106 108 109 110 112 | gag Glu 285 cct Pro | Gly 270 ctc Leu gga Gly | gac Asp cgt Arg att | tat Tyr ggt Gly gca | cca Pro gct Ala 305 gca Ala | tcc Ser 290 ttt Phe | gaa Glu 275 tat Tyr cag Gln | att Ile ccg Pro tgt Cys | gaa Glu tat Tyr ggt Gly | val aaa Lys gac Asp 310 aag | Gly gat Asp 295 aag Lys | Met 280 gga Gly tac Tyr | ggt Gly gta Val atg | tgg Trp atc | Ala aaa Lys agt Ser 315 cac | ttc Phe 300 agc Ser | 915 963 |
| 100 101 102 104 105 106 108 109 110 112 113 114 | gag Glu 285 cct Pro | Gly 270 ctc Leu gga Gly cag | gac Asp cgt Arg att Ile ggt Gly | tat Tyr ggt Gly gca Ala 320 | cca Pro gct Ala 305 gca Ala | tcc Ser 290 ttt Phe gaa Glu | gaa Glu 275 tat Tyr cag Gln gct Ala | att Ile ccg Pro tgt Cys | gaa Glu tat Tyr ggt Gly 325 | val aaa Lys gac Asp 310 aag | gat Asp 295 aag Lys cct Pro | Met 280 gga Gly tac Tyr gaa Glu | ggt Gly gta Val atg Met | tgg Trp atc Ile gga Gly 330 | Ala aaa Lys agt Ser 315 cac | ttc Phe 300 agc Ser acc Thr | 915 963 1011 |
| 100 101 102 104 105 106 108 109 110 112 113 114 116 | gag Glu 285 cct Pro tta Leu | Gly 270 ctc Leu gga Gly cag Gln | gac Asp cgt Arg att Ile ggt Gly | tat Tyr ggt Gly gca Ala 320 gat | cca Pro gct Ala 305 gca Ala | tcc Ser 290 ttt Phe gaa Glu | gaa Glu 275 tat Tyr cag Gln gct Ala | att Ile ccg Pro tgt Cys ttt Phe | gaa Glu tat Tyr ggt Gly 325 aac | val aaa Lys gac Asp 310 aag Lys | gat Asp 295 aag Lys cct Pro | Met 280 gga Gly tac Tyr gaa Glu | gta Gly gta Val atg Met tgg | tgg Trp atc Ile gga Gly 330 gat | Ala aaa Lys agt Ser 315 cac His | ttc Phe 300 agc Ser acc Thr | 915 963 |
| 100 101 102 104 105 106 108 109 110 112 113 114 116 | gag Glu 285 cct Pro tta Leu ggt Gly | Gly 270 ctc Leu gga Gly cag Gln cca | gac Asp cgt Arg att Ile ggt Gly acc | tat Tyr ggt Gly gca Ala 320 gat Asp | cca Pro gct Ala 305 gca Ala | tcc Ser 290 ttt Phe gaa Glu | gaa Glu 275 tat Tyr cag Gln gct Ala cag | att Ile ccg Pro tgt Cys ttt Phe tac | gaa Glu tat Tyr ggt Gly 325 aac Asn | val aaa Lys gac Asp 310 aag Lys | gat Asp 295 aag Lys cct Pro | Met 280 gga Gly tac Tyr gaa Glu | gta gta val atg Met tgg Trp | tgg Trp atc Ile gga Gly 330 gat Asp | Ala aaa Lys agt Ser 315 cac His | ttc Phe 300 agc Ser acc Thr | 915 963 1011 |
| 100 101 102 104 105 106 108 109 110 112 113 114 116 117 | gag Glu 285 cct Pro tta Leu ggt Gly | Gly 270 ctc Leu gga Gly cag Gln cca | gac Asp cgt Arg att Ile ggt Gly acc Thr 335 | tat Tyr ggt Gly gca Ala 320 gat Asp | cca Pro gct Ala 305 gca Ala gct Ala | tcc Ser 290 ttt Phe gaa Glu ggt | gaa Glu 275 tat Tyr cag Gln gct Ala cag | att Ile ccg Pro tgt Cys ttt Phe tac Tyr 340 | gaa Glu tat Tyr ggt Gly 325 aac Asn | val aaa Lys gac Asp 310 aag Lys aat | gat Asp 295 aag Lys cct Pro | Met 280 gga Gly tac Tyr gaa Glu cca | gta gta gta gta gta tatg Met tgg Trp gaa Glu 345 | tgg Trp atc Ile gga Gly 330 gat Asp | aaaa Lys agt Ser 315 cac His | ttc Phe 300 agc Ser acc Thr | 915 963 1011 1059 |
| 100 101 102 104 105 106 108 109 110 113 114 116 117 118 120 | gag Glu 285 cct Pro tta Leu ggt Gly | Gly 270 ctc Leu gga Gly cag Gln cca Pro | gac Asp cgt Arg att Ile ggt Gly acc Thr 335 aag | tat Tyr ggt Gly gca Ala 320 gat Asp | cca Pro gct Ala 305 gca Ala gct Ala | tcc Ser 290 ttt Phe gaa Glu ggt Gly | gaa Glu 275 tat Tyr cag Gln gct Ala cag Gln | att Ile ccg Pro tgt Cys ttt Phe tac Tyr 340 gga | gaa Glu tat Tyr ggt Gly 325 aac Asn | val aaa Lys gac Asp 310 aag Lys aat Asn | gat Asp 295 aag Lys cct Pro tgg Trp | Met 280 gga Gly tac Tyr gaa Glu cca Pro | gta gta ytal atg Met tgg Trp gaa Glu 345 | tgg Trp atc Ile gga Gly 330 gat Asp | Ala aaa Lys agt Ser 315 cac His acc | ttc Phe 300 agc Ser acc Thr aac | 915 963 1011 |
| 100 101 102 104 105 106 108 109 110 112 113 114 116 117 118 120 121 | gag Glu 285 cct Pro tta Leu ggt Gly ttt | Gly 270 ctc Leu gga Gly cag Gln cca Pro | gac Asp cgt Arg att Ile ggt Gly acc Thr 335 aag Lys | tat Tyr ggt Gly gca Ala 320 gat Asp | cca Pro gct Ala 305 gca Ala gct Ala | tcc Ser 290 ttt Phe gaa Glu ggt Gly | gaa Glu 275 tat Tyr cag Gln gct Ala cag Gln | att Ile ccg Pro tgt Cys ttt Phe tac Tyr 340 gga | gaa Glu tat Tyr ggt Gly 325 aac Asn | val aaa Lys gac Asp 310 aag Lys aat Asn | gat Asp 295 aag Lys cct Pro tgg Trp | Met 280 gga Gly tac Tyr gaa Glu cca Gln caa Gln | gta gta yal atg Met tgg Trp gaa Glu 345 tat | tgg Trp atc Ile gga Gly 330 gat Asp | Ala aaa Lys agt Ser 315 cac His acc | ttc Phe 300 agc Ser acc Thr aac | 915 963 1011 1059 |
| 100 101 102 104 105 106 108 109 110 112 113 114 116 117 118 120 121 | gag Glu 285 cct Pro tta Leu ggt Gly | Gly 270 ctc Leu gga Gly cag Gln cca Pro | gac Asp cgt Arg att Ile ggt Gly acc Thr 335 aag Lys | tat Tyr ggt Gly gca Ala 320 gat Asp | cca Pro gct Ala 305 gca Ala gct Ala Glu | tcc Ser 290 ttt Phe gaa Glu ggt Gly | gaa Glu 275 tat Tyr cag Gln gct Ala cag Gln ggt Gly 355 | att Ile ccg Pro tgt Cys ttt Phe tac Tyr 340 gga Gly | gaa Glu tat Tyr ggt Gly 325 aac Asn | val aaa Lys gac Asp 310 aag Lys aat Asn | gat Asp 295 aag Lys cct Pro tgg Trp | Met 280 gga Gly tac Tyr gaa Glu cca Gln 360 | gta gta yal atg Met tgg Trp gaa Glu 345 tat | tgg Trp atc Ile gga Gly 330 gat Asp | Ala aaa Lys agt Ser 315 cac His acc Thr | ttc Phe 300 agc Ser acc Thr aac Asn | 915 963 1011 1059 1107 |
| 100 101 102 104 105 106 108 109 110 112 113 114 116 117 118 120 121 122 124 | gag Glu 285 cct Pro tta Leu ggt Gly ttt | Gly 270 ctc Leu gga Gly cag Gln cca Pro ttc Phe 350 ctc | gac Asp cgt Arg att Ile ggt Gly acc Thr 335 aag Lys | tat Tyr ggt Gly gca Ala 320 gat Asp Lys | cca Pro gct Ala 305 gca Ala gct Ala gaa Glu | tcc Ser 290 ttt Phe gaa Glu ggt Gly ggt | gaa Glu 275 tat Tyr cag Gln gct Ala cag Gln ggt Gly 355 gag | att Ile ccg Pro tgt Cys ttt Phe tac Tyr 340 gga Gly | gaa Glu tat Tyr ggt Gly 325 aac Asn tgg | val aaa Lys gac Asp 310 aag Lys aat Asn gat Asp | gat Asp 295 aag Lys cct Pro tgg Trp agt Ser | Met 280 gga Gly tac Tyr gaa Glu cca Gln 360 cat | gta gta yal atg Met tgg Trp gaa Glu 345 tat Tyr | tgg Trp atc Ile gga Gly 330 gat Asp | Ala aaa Lys agt Ser 315 cac His acc Thr | ttc Phe 300 agc Ser acc Thr aac Asn ttc Phe | 915 963 1011 1059 |
| 100 101 102 104 105 106 108 109 110 112 113 114 116 117 118 120 121 122 124 125 | gag Glu 285 cct Pro tta Leu ggt Gly ttt Phe | Gly 270 ctc Leu gga Gly cag Gln cca Pro ttc Phe 350 ctc | gac Asp cgt Arg att Ile ggt Gly acc Thr 335 aag Lys | tat Tyr ggt Gly gca Ala 320 gat Asp | cca Pro gct Ala 305 gca Ala gct Ala gaa Glu | tcc Ser 290 ttt Phe gaa Glu ggt Gly ggt Gly tct Ser | gaa Glu 275 tat Tyr cag Gln gct Ala cag Gln ggt Gly 355 gag | att Ile ccg Pro tgt Cys ttt Phe tac Tyr 340 gga Gly | gaa Glu tat Tyr ggt Gly 325 aac Asn tgg | val aaa Lys gac Asp 310 aag Lys aat Asn gat Asp | gat Asp 295 aag Lys cct Pro tgg Trp agt Ser aac Asn | Met 280 gga Gly tac Tyr gaa Glu cca Gln 360 cat | gta gta yal atg Met tgg Trp gaa Glu 345 tat Tyr | tgg Trp atc Ile gga Gly 330 gat Asp | Ala aaa Lys agt Ser 315 cac His acc Thr | ttc Phe 300 agc Ser acc Thr aac Asn ttc Phe ata Ile | 915 963 1011 1059 1107 |
| 100 101 102 104 105 106 108 109 110 112 113 114 116 121 122 124 125 126 | gag Glu 285 cct Pro tta Leu ggt Gly ttt Phe ttc Phe 365 | gga Gly gga Gly cag Gln cca Pro ttc Phe 350 ctc Leu | gac Asp cgt Arg att Ile ggt Gly acc Thr 335 aag Lys | tat Tyr ggt Gly gca Ala 320 gat Asp Lys | CCa Pro gct Ala 305 gca Ala gct Ala gaa Glu tat | tcc Ser 290 ttt Phe gaa Glu ggt Gly tct Ser 370 | gaa Glu 275 tat Tyr cag Gln gct Ala cag Gln ggt Gly 355 gag Glu | att Ile ccg Pro tgt Cys ttt Phe tac Tyr 340 gga Gly atg | gaa Glu tat Tyr ggt Gly 325 aac Asn tgg Trp | val aaa Lys gac Asp 310 aag Lys aat Asn gat Asp | gat Asp 295 aag Lys cct Pro tgg Trp agt Ser aac Asn 375 | Met 280 gga Gly tac Tyr gaa Glu cca Gln 360 cat His | gta gta yal atg Met tgg Glu 345 tat Tyr | tgg Trp atc Ile gga Gly 330 gat Asp ggg Gly | Ala aaa Lys agt Ser 315 cac His acc Thr gag Glu agg | ttc Phe 300 agc Ser acc Thr aac Asn ttc Phe ata Ile 380 | 915 963 1011 1059 1107 1155 |
| 100 101 102 104 105 106 108 109 110 112 113 114 116 117 118 120 121 122 124 125 126 128 | gag Glu 285 cct Pro tta Leu ggt Gly ttt Phe ttc Phe 365 ctg | gga Gly cag Gln cca Pro ttc Phe 350 ctc Leu | gac Asp cgt Arg att Ile ggt Gly acc Thr 335 aag Lys act | tat Tyr ggt Gly gca Ala 320 gat Asp Lys tgg | CCa Pro gct Ala 305 gca Ala gct Ala gaa Glu tat Tyr | tcc Ser 290 ttt Phe gaa Glu ggt Gly tct Ser 370 gcg | gaa Glu 275 tat Tyr cag Gln gct Ala cag Gln ggt Gly 355 gag Glu | att Ile ccg Pro tgt Cys ttt Phe tac Tyr 340 gga Gly atg Met | gaa Glu tat Tyr ggt Gly 325 aac Asn tgg Trp ctt Leu | Val aaa Lys gac Asp 310 aag Lys aat Asn gat Asp | gat Asp 295 aag Lys cct Pro tgg Trp agt Ser aac Asn 375 aag | Met 280 gga Gly tac Tyr gaa Glu cca Fro caa Gln 360 cat His | gta gta yal atg Met tgg Trp gaa Glu 345 tat Tyr | tgg Trp atc Ile gga Gly 330 gat Asp ggg Gly | Ala aaa Lys agt Ser 315 cac His acc Thr gag Glu agg Arg | ttc Phe 300 agc Ser acc Thr aac Asn ttc Phe ata Ile 380 tca | 915 963 1011 1059 1107 |
| 100 101 102 104 105 106 108 109 110 112 113 114 116 117 118 120 121 122 124 125 126 128 | gag Glu 285 cct Pro tta Leu ggt Gly ttt Phe ttc Phe 365 ctg | gga Gly cag Gln cca Pro ttc Phe 350 ctc Leu | gac Asp cgt Arg att Ile ggt Gly acc Thr 335 aag Lys act | tat Tyr ggt Gly gca Ala 320 gat Asp Lys | CCa Pro gct Ala 305 gca Ala gct Ala gaa Glu tat Tyr | tcc Ser 290 ttt Phe gaa Glu ggt Gly tct Ser 370 gcg | gaa Glu 275 tat Tyr cag Gln gct Ala cag Gln ggt Gly 355 gag Glu | att Ile ccg Pro tgt Cys ttt Phe tac Tyr 340 gga Gly atg Met | gaa Glu tat Tyr ggt Gly 325 aac Asn tgg Trp ctt Leu | Val aaa Lys gac Asp 310 aag Lys aat Asn gat Asp | gat Asp 295 aag Lys cct Pro tgg Trp agt Ser aac Asn 375 aag | Met 280 gga Gly tac Tyr gaa Glu cca Fro caa Gln 360 cat His | gta gta yal atg Met tgg Trp gaa Glu 345 tat Tyr | tgg Trp atc Ile gga Gly 330 gat Asp ggg Gly | Ala aaa Lys agt Ser 315 cac His acc Thr gag Glu agg Arg | ttc Phe 300 agc Ser acc Thr aac Asn ttc Phe ata Ile 380 tca | 915 963 1011 1059 1107 1155 |





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DATE: 04/25/2001 TIME: 07:30:53 PATENT APPLICATION: US/09/744,852

Input Set : A:\es.txt

Output Set: N:\CRF3\04252001\I744852.raw

| | gtt Val | | | | | | | | | | | | | | | | 1251 |
|------------|-------------------|------------|------|------------|------------|-------|-------|-------|--------------|------------|-------|-------|-------|--------------|------------|--------|------|
| 136 137 | cct Pro | | Leu | acc | | | | Tyr | aac | | | | Arg | gat | | | 1299 |
| | ctt Leu | | | | | | | | | | | | | | | | 1347 |
| 142 | aca | 430 tat | att. | αаα | atα | cat | 435 | cac | mam | car | cca | 440 | σat | αca | cta | tat | 1395 |
| 145 | Thr | _ | _ | | _ | _ | _ | | | _ | | | _ | _ | | _ | 1373 |
| 149 | gca Ala | | | _ | Leu | - | | | | Ala | | _ | | _ | Glu | - | 1443 |
| 150 152 | caa | gtt | cca | ctt | 465 gct | ggg | gag | aat | gca | 470 ttg | cca | cga | tac | gat | 475 gat | tat | 1491 |
| 153 154 | Gln | Val | Pro | Leu 480 | Ala | Gly | Glu | Asn | Ala 485 | Leu | Pro | Arg | Tyr | Asp 490 | Asp | Tyr | |
| | gca Ala | | - | _ | | | | - | | | - | | | | - | | 1539 |
| 158 | | | 495 | | | | | 500 | | | | | 505 | | _ | • | 1507 |
| | tca Ser | | | | | | | | | | | | | | | | 1587 |
| 165 | gac Asp 525 | | | | | _ | | | | _ | | - | - | | | _ | 1635 |
| 168 | aaa Lys | _ | | _ | | aaa | _ | _ | | | tgc | | _ | | _ | gag | 1683 |
| 172 173 | agg Arg | | - | Glu | cat | | | | Ile | act | _ | _ | | Val | caa | _ | 1731 |
| | gct Ala | - | _ | - | | _ | | taag | 565 Jcaaa | atg g | gttgt | caaa | at ag | 570 gtact | tgtaa | ì | 1782 |
| 178 | ++++ | aato | 575 | ttac | rotas | oc at | -aasa | ++++ | tes | acat | -att | 2002 | aggat | ct t | atac | gctcgt | 1842 |
| | | | | | | | | | | | | | | | | gacat | 1902 |
| | tate | | | | | a ca | ataat | tcag | , tag | gtaaa | aaaa | aaaa | aaaa | ı | | | 1950 |
| | <210 <211 | | | | | | | | | | | | | | | | |
| | <212 | | | | _ | | | | | | | | | | | | |
| | <213 | | | | | num | tube | erosu | ım | | | | | | | | |
| | <400 | | | | | Dro | uia | Cln | Tlo | C1++ | 7 1 n | T 011 | Con | C1., | mh m | Con | |
| 194 | Met 1 | нта | Met | ser | Leu 5 | LIO | птЭ | GIII | TTG | 10 | HIG | ьеи | ser | стх | 15 | Set | |
| | Leu | Thr | Ala | Glu 20 | _ | Gly | Gly | Val | Ser 25 | | Glu | Val | Pro | Ala 30 | | Gly | |
| | Ser | Ser | Ala | | Ser | Ala | Met | Trp | | Thr | Pro | Met | Thr | | Leu | Lys | |



DATE: 04/25/2001 RAW SEQUENCE LISTING TIME: 07:30:53 PATENT APPLICATION: US/09/744,852

Input Set : A:\es.txt

Output Set: N:\CRF3\04252001\1744852.raw

| 203 | | | 35 | | | | | 40 | | | | | 45 | | | |
|-----|------------|-------|-------|------|----------------------|----------|------------|------------|----------------|---------------|--------------|-------------|-------|------|--------------|-------------|
| | Val | Ser | | Gln | Lys | Thr | Gly | Thr | Glu | Ile | Asp | Arq | | Ser | Pro | Ser |
| 207 | | 50 | | | • | | 55 | | | | ~ | 60 | | | | |
| 210 | Pro | Ser | Pro | Pro | Met | Ser | Pro | Met | Met | Gly | Gly | Gly | Met | Arg | Pro | Asp |
| 211 | 65 | | | | | 70 | | | | | 75 | | | | | 80 |
| 214 | Leu | Leu | Ala | Cys | Gln | Ala | Leu | Met | Glu | Ala | Gln | Val | Asp | Glu | Val | Val |
| 215 | | | | | 85 | | | | | 90 | | | | | 95 | |
| 218 | Glu | Arg | Glu | Tyr | Lys | Val | Arg | Asn | Ser | Ser | Glu | Lys | Glu | Lys | Gly | Val |
| 219 | | | | 100 | | | | | 105 | | | | | 110 | | |
| 222 | Pro | Val | Phe | Val | Met | Met | Pro | Leu | Asp | Ser | Val | Lys | Met | Asp | His | Thr |
| 223 | | | 115 | | | | | 120 | | | | | 125 | | | |
| | Val | Asn | Arg | Lys | Lys | Ala | | Asn | Ala | Ser | Leu | Gln | Ala | Leu | Lys | Ser |
| 227 | | 130 | | | | | 135 | | | | | 140 | | | | |
| | | Gly | Val | Glu | Gly | | Met | Met | Asp | Val | | ${\tt Trp}$ | Gly | Leu | Val | |
| | 145 | | | | | 150 | | | | | 155 | _ | | _ • | _ | 160 |
| | Arg | Asp | Ala | Pro | | GIu | Tyr | Asn | Trp | | GTĀ | Tyr | Ala | GIu | | Met |
| 235 | a 1 | | | _ | 165 | | a 1 | - | _ | 170 | 01 | | 77.7 | 36.4 | 175 | 51 |
| | GLu | Met | Ата | | ьys | HIS | GTĀ | ren | | vaı | GIN | Ата | vaı | | ser | Pne |
| 239 | II | 01. | 0 | 180 | c1 | N' a m | 1701 | a1 | 185 | Com | Crra | шЬ» | т1. | 190 | T 011 | Dwo |
| | HIS | Gln | 195 | СТУ | GIY | ASI | vaı | 200 | Asp | ser | Cys | THE | 205 | Pro | Leu | Pro |
| 243 | λνα | Trp | | Wa I | Clu | C1 | Mot | | Two | 7 an | Dro | 7.00 | | 71- | Фттъ | Πh∽ |
| 247 | AIG | 210 | Val | Val | GIU | GIU | 215 | GIU | цуз | ASP | PIO | 220 | Leu | нта | ıyı | 1111 |
| | Δen | Gln | ጥተኮ | Glv | Δτα | Δτα | | Dhe | Glu | ጥ የፖለተ | Va 1 | | T.A11 | Glv | Cve | Δen |
| | 225 | GIII | 111 | OLY | nry | 230 | 11511 | THE | ΟIU | -11- | 235 | DCI | LCu | OLY | Cys | 240 |
| | | Leu | Pro | Val | Leu | | Glv | Ara | Thr | Pro | | Gln | Cvs | Tvr | Ser | |
| 255 | | | | , | 245 | -10 | 1 | 5 | | 250 | , | 4 | 010 | -1- | 255 | |
| | Phe | Met | Arq | Gly | Phe | Arq | Asp | Arq | Phe | | Asn | Leu | Leu | Gly | Asp | Thr |
| 259 | | | _ | 260 | | _ | • | , | 265 | | | | | 270 | • | |
| 262 | Ile | Val | Glu | Ile | Gln | Val | Gly | Met | Gly | Pro | Ala | Gly | Glu | Leu | Arg | Tyr |
| 263 | | | 275 | | | | _ | 280 | | | | | 285 | | _ | - |
| 266 | Pro | Ser | Tyr | Pro | Glu | Lys | Asp | Gly | Val | Trp | Lys | Phe | Pro | Gly | Ile | Gly |
| 267 | | 290 | | | | | 295 | | | | | 300 | | | | |
| 270 | Ala | Phe | Gln | Cys | Tyr | Asp | Lys | Tyr | Met | Ile | Ser | Ser | Leu | Gln | Gly | Ala |
| | 305 | | | | | 310 | | | | | 315 | | | | | 320 |
| | Ala | Glu | Ala | Phe | _ | Lys | Pro | Glu | \mathtt{Trp} | _ | His | Thr | Gly | Pro | | Asp |
| 275 | | | | | 325 | | | | _ | 330 | | | | | 335 | |
| | Ala | Gly | Gln | _ | Asn | Asn | Trp | Pro | | Asp | Thr | Asn | Phe | | Lys | Lys |
| 279 | | | | 340 | | _ | _ | _ • | 345 | | | | _• | 350 | | _ |
| | Glu | Gly | | GLY | Trp | Asp | Ser | | Tyr | GLY | Glu | Phe | | Leu | Thr | Trp |
| 283 | _ | _ | 355 | | _ | _ | _ | 360 | -1 | | _ | | 365 | -1 | _ | |
| | Tyr | Ser | GLu | Met | ьeu | Leu | | HIS | GTA | GIU | Arg | | Leu | GIn | Ser | Ата |
| 287 | T | 370 | т1. | Dha | a 1 | 3 | 375 | a 1 | 17-1 | T | T 1. | 380 | 17. 1 | T | T 1 a | 3 1- |
| | _ | Ala | тте | rne | GIU | 390 | гуѕ | стА | val | ьys | 395 | ser | ٧dl | гла | TTE | |
| | 385 | T1^ | ui a | Trn | Uic | | <u>-</u> 1 | Thr | λκα | Cor | | λls | Dro | Cl v | T.OU | 400 |
| 294 | дту | Ile | птр | тъ | 405 | тАт | ату | TIIL | мту | 410 | птр | мта | FIO | GIU | 415 | 1111 |
| | Δla | Gly | Τυr | Tur | | Thr | Ara | Agn | Δτα | | Glv | Tvr | Leu | Pro | | Δla |
| 299 | *1.±U | O T Y | - 1 - | 420 | 11011 | 1111 | 9 | 11011 | 425 | P | - <u>- 1</u> | -1- | ьcu | 430 | 110 | u |
| | | | | 0 | | | | | | | | | | | | |



RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/744,852

DATE: 04/25/2001

TIME: 07:30:53

Input Set : A:\es.txt

Output Set: N:\CRF3\04252001\I744852.raw

| | Gln | Met | | Ala | Arg | His | Gly | | Val | Phe | Asn | Phe | | Cys | Val | Glu |
|-----|-----|------|------|-----|-------|-----|-----|--------|------------|------------|-----|-----|-----|------------|-----|------------|
| 303 | | _ | 435 | • | | | _ | 440 | _ | | _ | _ | 445 | _ | | _ |
| | Met | - | Asp | His | GLu | GIn | | GIn | Asp | Ala | Leu | - | Ala | Pro | GIu | Lys |
| 307 | | 450 | | | | | 455 | | | | | 460 | | | | |
| 310 | Leu | Val | Arg | Gln | Val | Ala | Leu | Ala | ${	t Thr}$ | Gln | Glu | Ala | Gln | Val | Pro | Leu |
| 311 | 465 | | | | | 470 | | | | | 475 | | | | | 480 |
| 314 | Ala | Gly | Glu | Asn | Ala | Leu | Pro | Arg | Tyr | Asp | Asp | Tyr | Ala | His | Glu | Gln |
| 315 | | _ | | | 485 | | | _ | _ | 490 | _ | _ | | | 495 | |
| 318 | Ile | Leu | Gln | Ala | Ser | Ser | Leu | Asn | Ile | Asn | Asp | Gln | Ser | Gly | Asp | Arq |
| 319 | · | | | 500 | | | | | 505 | | - | | | 510 | - | _ |
| | Glu | Met | Cvs | | Phe | Thr | Tur | T.e.II | | Met | Agn | Pro | Asp | | Phe | His |
| 323 | 014 | 1100 | 515 | | 1 110 | | -1- | 520 | 9 | | | 110 | 525 | Lou | | |
| | Pro | λan | | Trn | λνα | λrσ | Dho | | 715 | Dho | ₩-1 | Lvc | | Mot | Luc | Clu |
| | PIO | - | ASII | тър | ALY | AIG | | AGI | АТа | FIIC | vai | - | цуз | Mec | цуз | GIU |
| 327 | ~ 1 | 530 | _ | | _ | _ | 535 | _ | | a 1 | 1 | 540 | _ | a 1 | | ~ 1 |
| | Gly | Lys | Asp | Ala | Asn | - | Cys | Arg | GLu | GIn | | GIu | Arg | GIu | Ala | |
| 331 | 545 | | | | | 550 | | | | | 555 | | | | | 560 |
| 334 | His | Phe | Val | His | Ile | Thr | Gln | Pro | Leu | Val | Gln | Glu | Ala | Ala | Ala | Ala |
| 335 | | | | | 565 | | | | | 570 | | | | | 575 | |
| 338 | Leu | Met | His | | | | | | | | | | | | | |





VERIFICATION SUMMARY

PATENT APPLICATION: US/09/744,852

DATE: 04/25/2001 TIME: 07:30:54

Input Set : A:\es.txt

Output Set: N:\CRF3\04252001\I744852.raw

L:10~M:270~C: Current Application Number differs, Replaced Current Application No L:10~M:271~C: Current Filing Date differs, Replaced Current Filing Date